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ABSTRACT

Part of a volume which explores current issues in service delivery to infants and toddlers with handicapping conditions (ages birth to 3), this chapter discusses issues relating to staffing of early intervention programs and reports the results of a study designed to clarify the staffing and teaming options currently used by selected intervention programs. Characteristics and strengths of three models of team organization are described: multidisciplinary, interdisciplinary, and transdisciplinary. Results of structured telephone interviews with administrators of 10 infant intervention programs are then presented, touching on the following areas: program staffing patterns (staff availability, core staff roles, and team structure); examples of team processes (assessment, program planning, and intervention functions); program components supporting team models (role release, communication, role of the developmental specialist, and parent roles). Among implications drawn from these interviews are that the same team model does not necessarily have to apply across all program functions and that team members need to be prepared to function as generalists as well as specialists in their own disciplines. (JW)

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6. Staffing Patterns and Team Models in Infancy Programs

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Provisions of P.L. 99-457 have major implications for staffing.

Children served will display a wider range of needs.

New definitions of "staff," "team," and "collaboration" will emerge.

Colleges and universities are called upon to offer training.

Structure is dependent on many factors.

□ The provisions of P.L. 99-457, The Education of the Handicapped Act Amendments of 1986, have major implications for the staffing of early intervention programs. The most obvious application is the requirement that early intervention services include a multidisciplinary assessment and a written individualized family services plan (IFSP) developed by a multidisciplinary team that includes parents.

Other provisions less obviously related to staffing nonetheless will also influence roles filled by personnel in these programs, thus influencing the training necessary to prepare professionals for these roles. First, eligibility definitions are written in such a way that, subject to further definition by individual states, children served will display a wider range of needs, necessitating not only increased knowledge on the part of individual service providers, but an expanded range in the types and intensity of services provided. Second, the staff providing services to any one family may represent multiple disciplines, and some of them may not be employees of the primary intervention program. New definitions of "staff," "team," and "collaboration" undoubtedly will emerge.

The law, while certainly a major force in determining the future direction of staffing patterns and team models, is just one indication, and in part a culmination, of a more general and increasingly evident concern with staffing issues (Bricker & Slentz, in press; "CEC session identifies," 1984; *Guidelines for infant personnel*, 1984; *Statement of the Division*, 1986). One area of primary concern has been the delineation of disciplines to be included on early intervention teams. Overlaying this question are the thornier ones of the role definitions of these disciplines and the processes through which professionals working with any single family will interact with one another.

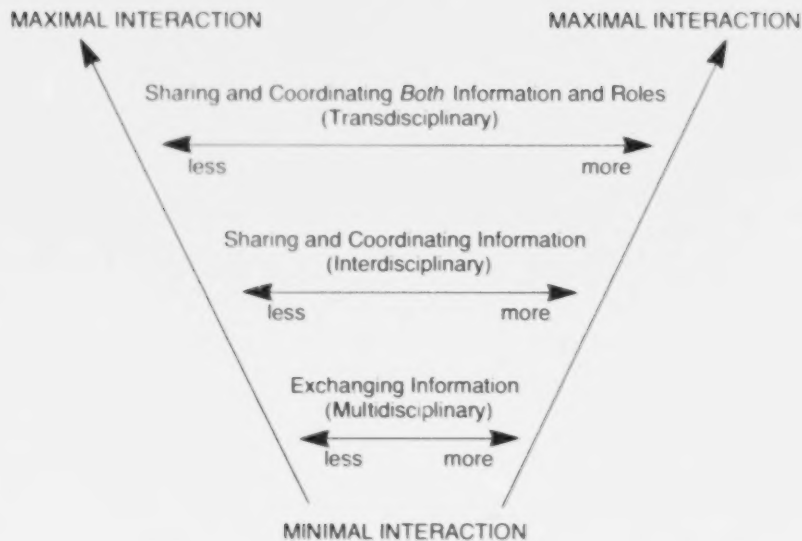
Issues related to staffing of early intervention programs are particularly salient at the present time. State plans are being developed which will set standards both for who should be included on teams and for licensing and training of these personnel. Simultaneously, even as role definitions are still evolving, colleges and universities are being called upon to offer training to meet the increased need for personnel uniquely qualified to work with infants with special needs and their families. Collaboration among personnel has become one of the primary concerns of personnel training.

The purpose of this chapter is to report and reflect on the results of a study designed to clarify the staffing and teaming options currently used by intervention programs. Prior to reporting these results, an introduction to team models will be provided through a brief review of the literature. The interested reader is referred to Woodruff and McGonigel (Chapter 8) for a more extensive description.

MODELS OF TEAM ORGANIZATION

□ Teams comprise at least three different but interrelated factors: (a) structure (who is on the team), (b) function (what they do), and (c) interaction (how they do it; i.e., how they interact/communicate) (cf. Golin & Ducanis, 1981). Structure is dependent on many factors (Campbell, 1982; Fewell, 1983): age and handicapping condition of the person to whom services are to be delivered, availability of staff, funding, parent preferences, geographic location, ecology of the family unit, and theoretical orientation. The structure of the team also might be expected

Figure 1. Hierarchy of Service Delivery Interaction.



to vary for different programmatic functions (e.g., assessment, IEP development, intervention). Moreover, the word "team" implies a certain level of interaction: it is not merely an association, but rather a commitment to work together toward a common goal. Brill (1976) described this team interaction synergistically, as a "...transactional process, out of which evolves a totality that is greater than that which can be achieved by any of the individuals working alone or alone in summation" (p. 23).

Although structure and function influence the nature of the team, the interaction among team members appears to be the component that distinguishes among the various types of team models, to the extent that the manner of interaction is reflected in the nomenclature of special education service delivery team models: multidisciplinary, interdisciplinary, and transdisciplinary. This interaction can be conceptualized on a hierarchical basis from minimal to maximal levels of interaction: (a) exchanging information (multidisciplinary), (b) sharing and coordinating information (interdisciplinary), and (c) sharing and coordinating both information and roles (transdisciplinary). These three levels are illustrated in Figure 1, which reflects the additive nature of the characteristics of these team models.

Multidisciplinary Team

□ A *multidisciplinary* team is a group of professionals who perform related tasks independently of one another. They constitute a "team" only by association. Examples of this approach are evident in the medical field. Professionals of many different disciplines are often needed to provide services. However, evaluations and consultations are independent, and there is no ongoing coordination of information between team members (Bennet, 1982; Fewell, 1983). Instead, there is diffusion of responsibility (Beck, 1977), with individuals viewing their roles as separate from those of other team members. Recommendations may be communicated via

Interaction component distinguishes various types of team models.

A multidisciplinary team performs related tasks independently of one another.

individual written reports or by talking directly to the patient (Fewell, 1983). In some cases the information may be collected by or sent to one team member who then interprets that information and presents the recommendations (Hart, 1977). Individual reports may also be presented at staff meetings (McCormick & Goldman, 1979). However, the purpose of exchanging information is to present the goals and plans of each discipline, not to coordinate across disciplines.

A strength of the multidisciplinary model is that more than one discipline is involved. With input from a group of people, there is more expertise available with which to make decisions, and less chance for one person's mistakes or biases to determine the course of events. However, this model has numerous weaknesses because of the nature of the independent roles and minimal interaction among team members. The process is one of piecing information together rather than coordinating information to form a unified, coherent picture. By definition, the multidisciplinary model is a "team" model only in a very loose sense. The minimal interaction of its members does not allow for the dynamics that lead to team cohesion and commitment. Hence, there may be no team consensus.

There are weaknesses in this model because of independent roles and minimal interaction.

Interdisciplinary Team

□ An *interdisciplinary* team is a group of professionals who perform related tasks independently, but interact with each other in order to coordinate their efforts. Interdisciplinary team members constitute a "team" by their sharing of information to reach a common goal. The intent is that the goals and activities of each discipline will support and complement those of other disciplines. McCormick and Goldman (1979) have pointed out that theoretically there are three team commitments: group decision making, a unified service plan, and opportunity for interaction among the various disciplines. To facilitate this flow of information among team members, one person usually functions as a case manager (McCormick & Goldman, 1979).

The strengths of the interdisciplinary team model are in the efforts to share and coordinate information. However, one possible drawback is the influence of "professional turf" (Fewell, 1983). Some team members may define their roles and expertise more rigidly to protect their professional identity. This type of attitude would strain the functioning of an interdisciplinary team. Another inherent drawback may be the potentially ambiguous role of the case manager. Having one person coordinate information and facilitate team meetings is sound administrative practice in terms of efficiency and productivity. However, if the case manager were to assume an autocratic, decision making role in addition to the administrative role, then recommendations would be unilateral rather than interdisciplinary.

An interdisciplinary team performs related tasks independently but interact with each other.

One person functions as a case manager.

Strengths are in the efforts to share.

If the case manager were to assume an autocratic role, recommendations would be unilateral.

Transdisciplinary Team

□ A *transdisciplinary* team is a group of professionals who perform related tasks interactively by sharing not only information but also roles. They constitute a "team" through their highly coordinated efforts to interact with one another. What makes the team "transdisciplinary" is the characteristic of sharing roles (role release); "...rather than being apportioned among the disciplines according to their specialty, interven-

A transdisciplinary team shares roles.

tion becomes the responsibility of one (or possibly, two) team member(s). The other team members are available on a continuing basis for consultation and direct assistance" (McCormick & Goldman, 1979, p. 154). When extended to the area of assessment, transdisciplinary teaming is often called *arena assessment* because one person does the testing while the other team members (including parents) observe (Wolery & Dyk, 1984).

Arena assessment is one form of transdisciplinary teaming.

Another characteristic of a transdisciplinary team is that team members accept and accentuate each other's knowledge and strengths to benefit both the team and the child (Lyon & Lyon, 1980). Staff development in the form of mutual training is basic to the concept of role release, enabling each member to assume and implement disciplinary aspects of the roles of other members. Lyon and Lyon (1980) defined role release as a sharing of information and skills between two or more members. It may occur at three increasing levels of complexity: sharing general information, teaching others to make specific judgments, and teaching others to perform specific actions. The first two levels pertain to the sharing of information while the third level pertains to the sharing of roles. Although the concept of role release is usually associated with transdisciplinary teaming, it is obvious that the first two levels apply in increasing degrees to the other team models as well. The third level of role release is a feature only of the transdisciplinary model.

Role release is a feature of the transdisciplinary model.

The literature on transdisciplinary teaming in special education indicates that the teacher is usually the key facilitator of role release (Lyon & Lyon, 1980), since that role is often central in the educational process. Hence, the teacher is not only a specialist but also a generalist. Bricker (1976) has proposed that the teacher become an "educational synthesizer" whose responsibility would be to "...seek information from a variety of specialists and then integrate such inputs into intervention procedures that can be implemented daily by a classroom staff member or parent" (Bricker, 1976, p. 96). An educational synthesizer would be responsible not only for administrative case management, but also for program implementation. More recently, a similar role has been advocated for the infant interventionist (Fewell, 1983). Likewise, related service personnel must be able to function as both generalists and specialists on early intervention transdisciplinary teams. Examples of intervention strategies include integrated therapy (providing therapy in the classroom and/or other natural environments as opposed to segregated environments) and consultation.

The teacher may be a specialist and generalist.

Service personnel also must function as generalists and specialists.

The high degree of interaction and coordination required by the transdisciplinary model is a strength but also a potential area of weakness. Sears (1981) concluded that variables that may contribute are role ambiguity (team members' uncertainty about their roles), role conflict (job expectations that conflict with one another), and role release (loss of "professional identity" due to role sharing). However, these potential weaknesses may be outweighed by the following strengths: increased agreement among members as to the acceptability of decisions (Cooper & Wood, 1974); greater willingness to implement decisions (Bass & Leavitt, 1963); and enhancement of opportunities for team members to learn from one another (Wolery & Dyk, 1984). Benefits for the child include increased services regardless of budgetary restrictions; decreased fragmentation of services; maximized intervention time; continuity and consistency of services; and holistic treatment (Sears, 1981).

Weaknesses may be outweighed by strengths.

STAFFING PATTERNS AND TEAM MODELS AS APPLIED IN CURRENT PROGRAMS

*Lines between models
are not clear.*

□ Rarely is theory applied in toto to specific situations. Although the literature gives some guidance in relation to differences and similarities in team models, the lines between models are not yet clear. Much confusion exists as to how programs actually organize components to facilitate interactions between disciplines; how well the three models describe these organizational systems; and what programmatic variables appear to be related to team models. The purpose of this section is to address these issues, using results derived from an in-depth telephone interview with administrators in 10 infant intervention programs.

*An initial list of 26 programs
was constructed.*

Programs* contacted for telephone interviews were selected from among demonstration projects funded through the Handicapped Children's Early Education Program (HCEEP). An initial list of 26 programs was constructed, containing all programs that: (a) served children aged birth to 3; (b) were in their second or third year of funding, or were in the first year beyond their 3-year grant but still functioning in a service delivery capacity; (c) functioned as comprehensive service delivery systems; and (d) served a wide range of children and families (i.e., were not limited to some specific subcategory). From the resulting list of 26 programs, 10 were selected using a table of random numbers. Administrators of these programs were contacted to establish appointments for telephone interviews lasting approximately 1 to 1 1/2 hours.

*From 26 programs,
10 were selected.*

A structured format was developed including questions related to demographic variables; disciplines that were part of the program staff or available on a consultant basis; and roles and interactions of these individuals during assessment, IEP development, and intervention. All interviews were conducted by one of the authors (MH). However, several interviews were audiotaped so that the completeness of written materials could be reviewed by both authors.

*Interviews were used to develop
examples of team models.*

Quantitative descriptions of the programs were derived by summarizing data related to several demographic variables, types of staff available, and team models characterizing the programs at each of the three stages of the program process (assessment, IEP development, intervention). Interviews then were used to develop examples of team models as applied at the three different stages of the program process. Finally, based on these descriptions, generalizations were derived related to components of teaming that appear to characterize major differences among team models as implemented in these programs.

Of the 10 randomly selected programs, 2 were part of the public school system and 1 was funded through a university; the remaining 7 were associated with public (e.g., Public Health) or private (e.g., Association for Retarded Citizens) agencies. Three served urban areas, while the

*Clay County Coordinated Preschool Program, Moorhead, MN; Early Childhood Program, Stark County Board of Mental Retardation/Developmental Disabilities, Canton, OH; HOPE (Helping Others Through Parent Education) Preschool Program, Birmingham, AL; Madison Area High Risk Project, Huntsville, AL; Parson's Regional Early Intervention Program—Evaluation, Demonstration, and Dissemination (PREP-EDD), Parsons, KS; Preparing Educational Programs for Special Infants Project (PEPSI), Clarksburg, WV; Project Dakota, Eagan, MN; Southern Appalachian Early Intervention Program, Johnson City, TN; Washington County Children's Program, Machias, ME.

others were located in less populated areas, serving a mixture of suburban, small town, and rural populations. All programs were noncategorical and accepted children having a wide range of disabilities and delays. Most of the programs provided services beyond their local areas, with five being county-wide and four serving several counties. The majority of programs (seven) combined center- and home-based services. Two were exclusively center-based, but provided home services if necessary. Only one program was totally home-based. Most programs, while having one or two primary service delivery patterns, also reported providing services through other avenues if needed.

All were noncategorical.

The majority combined center- and home-based services.

Program Staffing Patterns

□ **Staff Availability.** In each of the 10 programs, the staff role that was most central to service delivery functioned as both primary interventionist and primary coordinator of services to the child and family. This role did not fall exclusively into the domain of any one discipline, and titles varied tremendously among programs; teacher (the most common), facilitator, developmental specialist, home trainer, home advisor, and home therapist. For purposes of clarity, the term *developmental specialist* (DS) will be used throughout this chapter to designate this central role.

Developmental specialist will be used to designate this central role.

Professional training in early childhood education or special education was the most common background of the DSs, and many of these individuals were certified teachers. In addition, persons from other disciplines, particularly speech/language therapists, also served in this role. However, this tended to occur only in programs that had several people serving as developmental specialists, and in each case, at least one DS was an educator. The majority of programs (6 out of 10) reported having only one DS.

Many were certified teachers.

In only one program was the DS position filled by nondegreed people. Other programs, however, used people at paraprofessional levels, or people with specializations but without certification, as part of a larger intervention team with degreed or certified professionals.

Of people from other disciplines who were typical full-time staff members, speech/language therapists were the most common, filling positions in 9 of the 10 programs. Four programs reported having full-time occupational therapists, while two had full-time physical therapists, two had full-time nurses, and three had full-time psychologists. In each case where a full-time psychologist was reported, this individual served primarily as program coordinator/director, but performed psychologist functions when needed. Although all programs reported having a coordinator/director, in several cases this individual also functioned part time as a DS. Other examples of multiple roles were common, such as one program in which an LPN served a specialized role in relation to medical issues and also as a paraprofessional in a center-based classroom. A small number of programs (1-2) employed part-time (less than 50%) personnel as speech/language therapists and occupational therapists. Other full- or part-time staff mentioned by one to two programs were motor development specialist, certified occupational therapy associate, and social worker.

Speech/language therapists were the most common.

All reported a coordinator/director.

Many of the programs used parent agencies or outside community agencies to supplement core staff. Thus, very few consulting staff were hired on a private basis. Other outside staff included public health nurses, mental health specialists, and psychologists. The roles performed by

Many used parent or outside community agencies to supplement core staff.

these individuals ranged from consultation only, to direct services, to functioning as part of the core team. In one case, a professional from another agency had full responsibility for a caseload of families.

Core Staff Roles: Team Structure. Two questions were used to obtain general information related to (a) staff titles (disciplines) included on every team and (b) the *typical* core team as it would be constituted for any particular child and family. Parents were named as part of every team by all 10 programs. Of staff members, the title most consistently represented was the DS; this individual was part of every team in 9 out of 10 programs. For 3 programs, this was the *only* staff member represented on every team. Typical core teams formulated for any particular child and family generally were reported to include at least one discipline and (usually more) in addition to the team members described above, often on an "as-needed" basis. Therapists were the most common. Hence, with the exception of the DS and the parent, there was a great deal of variability in disciplines comprising the typical core team.

Parents were a part of every team.

The DS was part of every team in 9 out of 10 programs.

With the exception of the DS and parent, there was variability in the core team.

Examples of Team Processes

□ Multidisciplinary, interdisciplinary, and transdisciplinary team models are based on the involvement of multiple disciplines in providing early intervention services. Professionals functioning under a multidisciplinary model, although interacting with the same client, perform their respective tasks independently. Interdisciplinary teams, in contrast, perform their tasks independently, but share information with each other so that services to the client may be coordinated. In transdisciplinary teams, professionals from different disciplines share not only information but roles, with the aim of blending goals and intervention into a unified whole.

A brief review of data obtained from the interviews suggested that the team model adopted often varied according to the staff available. However, the model adopted also tended to vary across different programmatic functions. In general, the most prevalent model at the assessment stage was multidisciplinary (5 out of 10 programs). During the IEP development and intervention stages, interdisciplinary models were most common (7 programs). Applications of a transdisciplinary teaming model were least common; when this did occur, it was most likely to be during the assessment function.

Thus, within any program, staffing patterns and teaming models were not necessarily consistent across the three programmatic functions examined. Rather, combinations and variations of models were more common. A sampling of applications by programmatic function follows.

The team model varied according to staff available.

Transdisciplinary teaming models were least common.

Combinations and variations of models were common.

Assessment Function. An application of a multidisciplinary model to the assessment phase can be seen in a program in which the DS first screens the infant in the home in order to determine eligibility. Once this is determined, the DS conducts further assessment of the infant, again in the home setting, while other assessments are conducted in the center by therapists. Each professional writes a summary report of his/her assessment, to be shared later with other evaluators and the parents.

None of the sample programs demonstrated a purely interdisciplinary model during assessment. Characteristics of an interdisciplinary team model, however, did occur in combination with other team models. One program, for example, combines components of the interdisciplinary and

Each professional writes a summary report.

transdisciplinary models. Two professionals (educator, speech/language therapist) and the parent serve as an initial evaluation team. Testing occurs in the center. Three tests are given; however, the three tests are scored during the same session, with all team members present. Following this initial assessment, the family comes to the center again for additional assessment performed along more traditional disciplinary lines by physical therapists, occupational therapists, and (for most) a physician. The original team members participate as observers. A team meeting is held with all evaluators present to share this information.

One rural program provided an example of a more purely transdisciplinary model, closely fitting Wolery and Dyk's (1984) description of an arena assessment. Members of a team—educator, speech/language therapist, and occupational therapist—share the same caseload from initial assessment through exit from the program. Prior to assessment, the lead role (DS) is assigned to one of the three team members; this role is maintained throughout. Team members and parents decide what should be assessed and where the assessment should occur. Testing is done by the DS, with all team members (including parents) commenting and helping. Immediately after the assessment, observations are shared, with all members contributing data to all developmental areas. Parents are asked to contribute their observations first, with other team members supplementing as needed.

One rural program provided an example of a transdisciplinary model.

Testing is done by the DS with all team members commenting and helping.

Program Planning Function. There were no examples of programs that functioned along purely multidisciplinary lines during this stage. During plan development, disciplines come together to share information for the purpose of developing a common and agreed-upon mutual document closely fitting the earlier definition of the interdisciplinary model. In the majority of programs, however, there are variations in how the interdisciplinary model is applied, primarily reflecting the inclusion of some components of one of the other models.

During plan development disciplines come together.

One example of an interdisciplinary/transdisciplinary combination was provided by a rural program. In this program, an initial meeting is held with the larger evaluation team (including core team members and additional evaluators) to summarize assessment information with the parent and to discuss eligibility and services available. A second meeting is used to actually write the plan; only the core team (three disciplines) and parents are involved at this stage, with one core team member taking the primary DS role. All members contribute goals for all developmental areas.

Another rural program provided an example of plan development that relies on a more purely transdisciplinary model. Immediately following assessment, in which the parent participates as an active member, all team members contribute to a written summary of strengths and needs, followed by joint discussion of goals. This summary forms the basis of the plan, written at a later date by the parent and the DS.

Immediately following assessment, all team members contribute to a written summary.

Intervention Function. For a variety of reasons, deciding which team model was most descriptive of a program's approach proved to be even more difficult at the intervention stage than for assessment and plan development. First, "team" may be defined at several different layers including the following: the core team that assumes primary responsibility for ongoing, frequent contact with the family; the core team plus adjunct or ancillary staff who provide services on a less regular basis; and a still larger team composed of the above plus personnel from all agencies

"Team" may be defined at several different layers.

Models may differ depending on the particular needs of different families.

Intervention using a multidisciplinary model was rare.

The interdisciplinary model was the most common team model at the intervention stage.

DS and parent observe therapy groups.

involved with the child and family. A different team model may (or may not) describe the characteristics of team interaction at any or all of these layers. A second difficulty in describing team models at the intervention stage is that models may differ depending on the particular needs of different families. Despite these variations, it is possible to provide examples of typical applications of different team models, particularly if we restrict ourselves to the core team.

Intervention using a multidisciplinary model was rare. In very few programs did professionals provide direct services to the child and family that were physically isolated from professionals from other disciplines. In one program fitting primarily the multidisciplinary team model, one professional conducts small-group sessions with two or three infants on a twice weekly basis. Another example was provided by a service delivery system in which infants receive services from several professionals per visit, with time scheduled into different blocks for each professional. A home-based program in which each team member goes separately to the home provides still a third example. Ordinarily, where the multidisciplinary model was applied, it tended to describe an aspect of intervention that was only one part of a larger set of services.

The interdisciplinary model was by far the most common team model at the intervention stage, and took a variety of forms. One center-based program serves infants in small groups, using a team consisting of one professional from each of three disciplines (educator, speech/language therapist, occupational therapist). Weekly meetings are used to update objectives and plan intervention sessions. Within the classroom, children are rotated among the three disciplines, so that service delivery is on a one-to-one basis with each discipline.

A program illustrating aspects of both the interdisciplinary and transdisciplinary models provides home-based and center-based intervention on alternate weeks. Home services are provided by a DS alone, while center-based sessions are provided by a DS and a therapist together, but working with different children. Additional therapy is provided once each month in various locations around the service delivery area. The DS observes these sessions and provides follow-up in the home. Another program with a similar system of alternating weeks uses center-based groups primarily as therapy groups. All therapists serve on a contractual basis, but they come to the center to provide services. The DS and the parent observe therapy groups and follow through with therapy procedures. The DS and the therapists meet once a month to share information.

Several programs provided services that fit within a transdisciplinary team model. In one program, team members (educator, speech/language therapist, physical therapist) meet weekly to develop intervention activities that combine goals of all three disciplines, thus exemplifying the "integrated therapy" approach mentioned earlier. Sessions occur in a variety of settings including home, small groups, and clinics (infant and parent with team in center). The clinic is the primary delivery mode and involves all three team members. The emphasis of teaming is on working together to show the parent how to work with the child. Parents are involved as active participants in service delivery in all three settings, and their mental health is also viewed as a focus of service delivery.

Another program in which the team functions under a more purely transdisciplinary model is one in which each member of a three-person team (speech/language therapist, occupational therapist, educator)

functions as a generalist (DS) as well as a specialist. Primary responsibility for children and families is rotated equally among the three so that each serves as general interventionist for one third of the total caseload and as specialized consultant to the other two team members for the other families. Each child and family, therefore, receive direct services from only one professional. However, each professional is accountable for his or her own area of expertise, and teams meet for approximately 6 hours weekly to coordinate services. The philosophy in this program is that the team members serve as consultants to the family, with the family implementing the intervention plan.

Caution is required in attempting to apply team models to the intervention function: If intervention is defined only as direct delivery of service, team models that appear to characterize particular program components may be deceptive. Models are defined not by where or even by whom the intervention is implemented, but rather by the interaction among team members. Ongoing planning is integrally related to the actual intervention, and team models, therefore, must take both planning and intervention into account. For example, a center-based intervention session that on the surface appears to be operating along multidisciplinary lines may have been jointly planned by all disciplines, with each team member then implementing an integrated therapy activity.

Caution is required in attempting to apply team models to the intervention function.

Program Components Supporting Team Models

□ Despite the many variations in how models were applied to different program functions, and despite the small number of programs interviewed, several interrelated program components emerged as particularly useful for characterizing programs in relation to team models. Moreover, particular aspects of these components tended to appear together as clusters, representing the specifics that support the interaction hierarchy presented earlier in Figure 1.

Role Release. *Role release* (or role blending), representing the extent to which team members perform along disciplinary lines, was identified in the literature reviewed as the feature that best distinguishes among team models. At the base of the hierarchy shown in Figure 1, disciplines provide separate services (multidisciplinary); interdisciplinary teams build upon this by coordinating these services toward mutual goals; finally, one discipline acts as consultant to another or disciplines engage in joint planning/intervention (transdisciplinary). When there is no distinction among disciplines in the implementation of services, complete role release is occurring.

When there is no distinction among disciplines, complete role release is occurring.

Although role release often is seen as a distinguishing characteristic of the transdisciplinary model, it may be more useful to regard this variable as a continuum (from "less" to "more") within each team model, since teaming that was predominantly one model often also contained elements of another. For example, intervention carried out along disciplinary lines but within the same room at the same time would fall into an interdisciplinary rather than a transdisciplinary model. However, the close physical proximity of team members almost certainly would foster some degree of role blending among disciplines.

Teams demonstrating more role release also appeared to have core teams with more stable memberships—core teams consistently composed of the same individuals. In programs where professionals

functioned along more disciplinary lines, core teams tended to be formed for each case. It might be expected that role release would be more easily accomplished where team membership was ongoing, and several respondents in fact mentioned that teams must build ongoing relationships.

One additional aspect of role release that deserves attention, and which varied even within teams employing a transdisciplinary model, was whether the release was unidirectional or bidirectional. A major advantage of the transdisciplinary approach is that goals and methods of different disciplines can be integrated and implemented by a single person. This is in congruence with the "educational synthesizer" role mentioned earlier. The most common approach to accomplishing this was for one team member to assume primary responsibility for service delivery while other members were available on a continuing basis for consultation and assistance (McCormick & Goldman, 1979). The issue here is that when one discipline (usually an educator) is always placed in the role of primary interventionist while other disciplines consistently act as consultants, role release is unidirectional. In contrast, where the role of primary interventionist is shared equally among disciplines, with all disciplines (including the educator) taking equal responsibility for the consulting role, role release is bidirectional.

Communication was another program component which differentiated among team models.

Communication. Communication among disciplines was another program component that clearly differentiated among applications of different team models. Variations in this component, as in the definition of roles, appeared to be directly and logically related to the extent of role release among disciplines.

Communication patterns in the programs interviewed varied in both frequency and type. Teams exemplifying more role release tended to be characterized by (a) more frequent communication; (b) more different types of communicative mechanisms (e.g., formal staffings, planning sessions, written materials, informal interactions); (c) greater emphasis on face-to-face interaction; (d) team meetings directed toward a wider variety of purposes; and (e) more emphasis on ongoing communication related to joint planning and integrated intervention. This supports the hierarchical nature of Figure 1, in which higher levels build upon, rather than replace, lower levels of interaction.

Three different strategies consistently appeared in teams with a high degree of role release.

In addition, three different strategies consistently appeared in teams with a high degree of role release: arena assessment, integrated therapy, and consultation. Each of these emerged as vehicles for supporting the high levels of communication needed for role release, as each provided a format through which particular disciplines could assume the roles of other disciplines.

The generalist/specialist distinction is useful for understanding variations in the DS role.

Role of the Developmental Specialist. In this study, the developmental specialist appeared to play the central staff role in all programs. However, the role varied considerably in relation to team model and extent of role release. The generalist/specialist distinction is a useful one for understanding the variations found in the DS role. "Specialist" applies to knowledge and skills specific to one discipline, while "generalist" relates to broader-context knowledge and skills such as working with families and working in a team situation with other disciplines. In teaming, the knowledge and skills that are shared or released to other disciplines are specialist knowledge and skills, and any discipline filling the DS role

requires not only specialist knowledge and skills, but generalist knowledge and skills as well.

From these interviews, it was clear that the DS role was more often shared among disciplines in programs using transdisciplinary teams than in programs using other team models. In the literature related to older children with severe handicaps, individuals assuming this central role are assumed to be educators; however, this was not always true of these early intervention programs. Hence, education may best be thought of as one of the specialties represented on a team, having its own specialized contribution to make to that team. New terminology is needed to characterize both the educator who is a specialist in early intervention and the role of the DS (regardless of discipline), rather than regarding this as the same individual. This is not to say that programs could not, if they chose, use the same disciplines in the DS role, but only that clarification is needed between the specialist and generalist aspects of the role.

Education may be best thought of as one of the specialties on a team.

One obvious way in which the DS role varied across team models was that, as role release increased, the DS assumed more aspects of the specialist roles of other disciplines, particularly in the intervention function. A somewhat less obvious variation was related to *case management*, which emerged as a component that is highly related to differences in the application of different team models. From these interviews, differentiation between models appeared to be based on both *when* the case manager was assigned, and *how stable* this individual remained across program functions. The most typical pattern in the programs interviewed was for a DS to fill the case manager role for all functions. Programs using team models with a higher degree of role release tended to assign a case manager at an earlier point in the program process and to retain that manager throughout all program functions. Moreover, this person was always the DS. In contrast, programs functioning along more disciplinary lines tended to assign the case manager somewhat later in the process; to assign different case managers for the different functions; and/or to place case management outside the team (e.g., with a professional who was not part of the core team, or who was part of another agency).

As role release increased, the DS assumed more aspects of the specialist roles of other disciplines.

The most typical pattern was for a DS to fill the case manager role for all functions.

Role of Parents. The *role of parents* also was a program component which differentiated among team models. However, the relationship between model and parental role was not as clear as for other program components. All programs named parents as members of every team. However, within any particular program function, the team model most descriptive of program staff was rarely also completely descriptive of the parents' involvement. The role of parents was most clearly related to the team model in the transdisciplinary approach. Teams displaying more role release among disciplines also tended to assign parental roles that were more similar to their own. One program, in fact, indicated that the adoption of a team model with high degrees of role release among staff members was a result of its philosophy related to the role of families in early intervention.

The role of parents differentiated between team models.

Families have a unique, extremely important, and central role on early intervention teams. However, team models that describe relationships among disciplines may not be entirely appropriate for describing the relationship between various disciplines and the parent. Families are *both* participants in and recipients of services. How they participate and what they receive must be based on their individual desires and needs. That is, the team model cannot completely structure parental interactions with

Families have a unique, extremely important, and central role.

the other team members. New models are needed that will clarify the relationships between the team model and parental role.

DISCUSSION

P.L. 94-142 and P.L. 99-457 specify services be provided by a multidisciplinary team.

Terminology has become a major roadblock.

At least three layers of personnel were readily apparent.

□ Public Law 94-142 and the more recent P.L. 99-457 both specify that services to handicapped children be provided by a multidisciplinary team of professionals. The word multidisciplinary is used, however, to refer to the number and types of people to be involved in service delivery; the actual team interaction process is not defined (Pryzwansky, 1981; Sears, 1981). Modifications in the manner of interaction between team members have led to two other team models: interdisciplinary and transdisciplinary. Hence, these three words are used to represent three seemingly distinct team models that represent a hierarchy (from multidisciplinary to transdisciplinary) of increasing interaction and role release among disciplines. However, terminology has become a major roadblock to understanding because the three terms are often used interchangeably in the literature as well as in the field (Lyon & Lyon, 1980). In the current study, for example, although all 10 programs defined themselves as functioning within a particular teaming model, the terms used to describe the model did not necessarily reflect what was actually occurring within the program.

Some of the reasons why terminology may be so confusing became apparent in the course of this study. Few programs demonstrated a pure application of any one model. Rather, it was common for team models to vary across programmatic functions. Even within a particular function, different team models were often applied to the different service delivery patterns available in the program (e.g., center, home). Still another source of variation arose from how comprehensively the word team was used. In most programs, at least three layers of personnel were readily apparent:

1. A small core team of professionals (1-3 people) delivering direct, ongoing services to children and families—usually part of the regular program staff;
2. A second layer of professionals functioning in an adjunct role, whose specialties directly influenced service delivery and who might or might not be employed as program staff;
3. A third layer, usually from other agencies, who had far less frequent contact with children and families or who served the same children and families in capacities different from those offered by the program staff.

It is apparent that different team models may, but do not necessarily, characterize these three levels. Broad and imprecise application of terminology for team models not only obscures these variations, it no doubt contributes to sustaining the confusion. It is important that terminology and understanding be clarified, both to facilitate communication and to enable programs to make rational judgments related to their own teaming processes.

Interaction among team members and role release were identified from the literature as the team components most salient in distinguishing among the three team models. However, an underlying and even more pervasive factor appears to be the *purpose* of forming the team and what is to be accomplished by interaction among team members. All other

variables that tend to differentiate among models appear to be extensions of, and to both reflect and support, these different purposes.

Relating this back to Figure 1, the first level (multidisciplinary) provides a model in which information is exchanged, if at all, in order to *obtain awareness and understanding among disciplines*. There is no intent to influence other disciplines in carrying out their tasks, but only to exchange among disciplines the knowledge of what each is doing. At the second level (interdisciplinary), the purpose for which the team is established is to *coordinate services among disciplines*, so that each supports the other. The intent is to influence other disciplines to the extent that each discipline takes into account, and is directed toward similar goals as, the others. At the third level (transdisciplinary), the team is established in order to *enable each member to implement, in part or in whole, the disciplinary roles of other members*. This study indicated that these three levels of intent were supported by differential application of several other interrelated program components, which often appeared together as clusters (role release, communication patterns, roles of the staff and parents, case management).

It is clear that mitigating factors such as geographic location and availability of staff will, to some extent, determine program structure and team model. The current study, however, found no consistent relationship between team model and whether the programs were urban or rural, served small or large geographic areas, or used full-time, part-time, or consulting staff on their core teams. Rather, the determining factor appeared to be the philosophy of the program. This was particularly true of applications of the transdisciplinary model. While there were fewer examples of this model, the choice appeared to be not only conscious and purposeful, but also more consistently applied across program functions. Program structures grew from and supported the philosophy. In contrast, examples of applications of other team models appeared to be less of a conscious choice; the label fit the characteristics of the program, rather than vice versa. It is revealing that, among these 10 programs, those with more features of the transdisciplinary model were also those with written philosophy statements.

This greater cohesiveness within programs that apply more elements of the transdisciplinary model may result from the fact that this model has been the most extensively described in the literature. Despite this, it is interesting to note that the model is not generally well understood. For example, arguments for and against using a transdisciplinary approach often appear to be the same; cost effectiveness and optimal use of specialized disciplines are cited for both points of view. More careful description of philosophy and program components related to the different models, as well as consideration of differential application of models for different purposes, might also be extremely useful.

Multidisciplinary provides a model in which information is exchanged.

Interdisciplinary is to coordinate services.

Transdisciplinary is to enable each member to implement the roles of other members.

Those with more features of the transdisciplinary model were also those with written philosophical statements.

IMPLICATIONS

□ This study was based on interviews from only 10 programs. Therefore, generalizations drawn must be regarded with caution, and they should become topics and hypotheses for future research. Given this caveat, however, the depth of the interviews yielded a rich array of data that can be used to give direction to both program operation and personnel training.

Conscious Choice of Model

Conscious choices can be made concerning the application of program model.

□ For service delivery programs, this study indicated that conscious choices can be made concerning the applications of program model. Factors such as geographic location, staff availability, relative cost of different kinds of personnel, and size of caseloads certainly will influence these choices. It appears, however, that the program's teaming philosophy can be an equally influential factor. Creative use of settings and careful definition or redefinition of staff roles to support the chosen philosophy were used by these programs to overcome many of the constraints imposed by other factors.

Flexibility

The same team model does not have to apply across all program functions.

□ Two sources of flexibility are available to programs in considering these choices. First, the same team model does not necessarily have to apply across all program functions. By implication, programs could choose to use different models for different functions (e.g., applying a transdisciplinary arena assessment approach but using an interdisciplinary intervention approach). Another implication is that programs wishing to change team models have the option of doing so gradually; that is, one function, or even part of one function, at a time.

Flexibility lies in the differing layers of staff expertise.

A second source of flexibility lies in the differing layers of staff expertise available to the program. This study indicated that the core team is not necessarily composed only of disciplines employed directly by the program itself; in some cases, outside consultants function as members of the core team. Hence, choice of team model for each programmatic function can vary in relation to creative definitions of interactions among staff in the different layers. Moreover, the team model chosen may differ among layers; while the core team may function as a transdisciplinary team, personnel from other agencies working with that same infant and family may more effectively function as an interdisciplinary or multidisciplinary team.

Purpose

Openness, cooperativeness, and willingness to share and listen were named as necessary personal characteristics.

□ The purpose of teaming appears to be the single factor most reflective of teaming philosophy and, therefore, the most pervasive guide for making choices. Once the purpose is agreed upon for each programmatic function, program components and strategies can be developed to support them. These plans should include careful definition of each complex set of components related to team models: roles of staff and parents, role release, case management, and communication systems. Conscious choice of team models implies team commitment to those choices. Respondents to this study indicated that attitude was the single most important factor influencing the success of teaming. Openness, cooperativeness, and willingness to share and listen were all named as necessary personal characteristics. A common philosophy and orientation to service delivery also was mentioned. All in all, recognition and clarification of team goals are imperative, as is participation by team members in making these choices.

Training of Personnel

□ In relation to personnel training, this study indicated that to function as team members, all disciplines serving on core teams in early intervention programs need to be prepared to function not only as specialists in their own disciplines, but as generalists as well. The greater the degree of role release, the more essential is this training. Specialist training implies that for any discipline, intervention with infants and their families will differ from that for older children (Bricker & Slentz, in press; "CEC session identifies," 1984). Specialization in infancy is necessary not only to ensure high-quality intervention by each discipline, but also to build trust and confidence between team members in what other disciplines have to offer, so that information and roles will be shared. Generalist training implies that each discipline has some basic knowledge of the terminology and strategies of other disciplines as well as of family processes and needs, community support systems, and teaming processes. Training for the developmental specialist's generalist role (regardless of discipline) seems especially critical. In the programs interviewed, this individual assumed major responsibility for coordination of services, team leadership, and intervention regardless of the team model employed.

All disciplines on core teams need to function as specialists and generalists.

Careful consideration must also be given to where and when training for these many roles should occur. Few of the programs interviewed reported having any formal inservice training related to teaming. Those with team models using greater role release did indicate, however, that new staff often spent an apprenticeship period with other staff in order to orient themselves and internalize the teaming philosophy.

Several programs also indicated that orientation toward teaming was closely evaluated during the interview process. It seems apparent that training for specialist roles in early intervention should become part of the preservice training of each discipline. Generalist training, in contrast, needs to be integrated across disciplines, and may need to extend across the preservice and inservice levels. Training in teaming processes, in particular, must be ongoing for every team as it undergoes modification and restructuring.

Training in teaming processes must become ongoing.

Need for Research

□ Further research is needed to expand and clarify the results of this study. Observational research could determine whether or not the patterns emerging from these interviews actually do characterize team models in practice as well as in the perceptions of the respondents. Research also is needed to determine the relationship between different team models and outcomes such as parent and staff satisfaction, cost of services, and efficiency and effectiveness of service delivery. The current study indicates that programs can exercise a great deal of flexibility in making conscious choices related to applying team models. Further data are needed to support these decisions.

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